

WILL TECHNOLOGY DESTROY CIVILIZATION?

Why the Prophets of Doom Are Wrong

FRANZ BORKENAU

A COMMON and increasing disillusionment with technology today marks contemporary thinkers of the most divergent tendencies. A classic expression of this feeling was Aldous Huxley's *Brave New World*, a utopian novel portraying a world whose every problem and every difficulty has been solved by technology, but which for this very reason has become emptied of all meaning. Arnold J. Toynbee, though not envisaging any utopian ultimate in technology, also seems to lean to the view that modern technology is at bottom worthless—for "mankind's serious business is religion"; all that we need in the way of secular culture was already produced by the Greeks—in our technological efforts we are only the bad imitators of a past civilization.

The same tendency of thought has had such important representatives in Latin countries as Ortega y Gasset and Paul Valéry. But it has met with its strongest response in

AFTER World War I, a favorite theme for essayists was "the decline of the West." After World War II, the theme became "the end of civilization," even "the end of the world." This progressive pessimism is allied to a corresponding progress in technology—from saturation bombing to atom bomb to hydrogen bomb. But is it really so bad; will technology wipe out Western culture and, in doing so, itself commit suicide? FRANZ BORKENAU suggests we have too hastily turned against our old faith in science, which, he believes, has in it a human potential that will yet help civilization survive and progress. Mr. Borkenau was in left-wing German politics during the 20's: he went to England in 1934, but after the war returned to Germany, where he is now professor of history at the University of Marburg. He is the author of an important study of the modern world outlook (in German) and of *World Communism* (1939). His article "Marx's Prophecy in the Light of History" appeared in the May 1949 COMMENTARY. The present article was translated from the German by Martin Greenberg.

Germany. I mention here in particular only the Jünger brothers. Ernst Jünger, in his book *The Worker*, unlike Huxley, does not "reject" technics on aesthetic grounds or any other; but his positive conception of a perfect "Arbeitswelt" (workers' civilization) came very close to Huxley's utopia and yielded nothing to it in point of horror. Friedrich Georg Jünger for his part has launched an all-out campaign against technology—to what effect, we can see in Otto Veit's *Die Flucht vor der Freiheit* ("Flight from Freedom," Frankfurt 1948), which by a startling simplification would hold technology responsible for all that endangers our culture today.

LET me say at once that I do not deny the dangers of technology, which are tremendous. But what strikes one constantly about these lamentations over the evils of technology is their minimization of its unique achievements in modern times, achievements by no means limited to the sphere of the "practical." On the contrary, spiritual values of the highest order are inseparable from technology. Nor can you draw a line between technology and science—if only because without modern instruments there would be no modern science, as without science there would be no technology.

No one will deny that our science, in the course of its development from Galileo to Einstein and from Boyle to Planck and Rutherford, has penetrated the "interior of nature" as never before. Even supposing that technology is in fact as destructive in its consequences as many now claim it to be—is that all there is to it? For my part, I believe that as surely as the human spirit exists to illumine the cosmos with its knowledge, so surely does the modern conquest of nature represent this spirit's sublimest, most heroic achievement. However great the emo-

tional price we have paid for the "disenchantment of the world" that inevitably followed on this conquest of nature, however dreadful our psychic distress—still, what does this matter against the fulfillment of an eternal task of the human race?

In dismissing as an incidental matter the knowledge we have finally won of the basic structure of the material world, the critics of technology for the most part overlook the fact that these very insights have given us a glimpse into the basic structure of all existence, spiritual as well as material. Are these insights tragic in their refutation of cherished illusions?—well, all culture is tragic, all culture is paid for by the surrender of primitive consolations of the human soul. And may one not ask whether the real threat to culture does not perhaps come from those who have not the fortitude to face up to the consequences of this greatest of human triumphs, and must therefore take flight from reason?

But is the flight from reason and technology at all possible? We ought to put this question to ourselves, not in any aesthetic and utopian fashion, but in complete and deadly earnest. Let us say, conditionally, "yes," a flight is possible. The condition is: the reduction of the "white" population to a fraction of its present size; for the present European and American population levels, unlike the Asiatic, are dependent entirely upon technology. A sharp fall in our population is, of course, not out of the question. It is unfortunately more than merely conceivable that an atomic war should utterly destroy tens of millions of lives as well as our technological resources and abilities. In the absence of such an event, technology will certainly endure, so that we can only discuss the possibility of its disappearance by assuming an atomic catastrophe.

BERTRAND RUSSELL recently suggested that such a disappearance might be effected by a destructive outbreak of mass hatred against technology following an atomic holocaust. This vision of an outraged humanity turning upon science is an ever recurring one. Spengler, it might be remembered, held

that technology was something specifically "Western": peoples of alien cultures mastered technology only in order to use it in their struggle against the West; with the downfall of the West, they would cast it aside as "a monkey would a walking stick." Toynbee, too, would seem to expect much the same thing.

But is not Spengler's dark estimate of the future of technology intimately connected with his gross underestimation of what was really taking place in science? It was around 1914 that Spengler, himself originally a mathematician, disputed the possibility of any further significant advance in scientific theory, conceding a future only to purely practical technology. Obviously he mistook the actual depth of the current of science—mistook it grossly. Recent scientific developments, flatly contradicting him, have completely revolutionized our conception of the world. Hence a discussion of the problem cannot start out from any notion of a decline or "end" of science, but must begin by answering the question: *Is it conceivable that, as a result of enormous material and spiritual catastrophes, all the knowledge and skills we have acquired in the last three hundred years should be lost?*

Pointing to earlier cases of cultural decline does not in itself mean very much. To draw a parallel between our own situation and the decline into barbarism and the "dark ages" that marked the end of antiquity is certainly misleading. As Spengler pointed out, there is always more than one parallelism to choose from. You have to have what Spengler calls a "physiognomic pulse" to understand which parallels are valid and which are not. The parallel with the decline of antiquity is not. Although it is true that there was a sharp falling-off of urban life at that time, no real deterioration took place in technology. One of the most important arguments against a too simple notion of progress is contained in the fact that from the end of the Old Kingdom in Egypt (3rd millennium BCE) until the 11th century of our era, actually no real change occurred in technology—a state of affairs that speaks stronger than anything

else for the Spenglerian thesis of the distinctively Western character of technology.

But there are two sides to this coin of "Western science." Not only modern machine technology, but also something so seemingly insignificant as the European method of harnessing draught-cattle, profoundly affects population growth, the rise of cities, etc.* Will other, "colored" civilizations cast this achievement aside as a monkey would a walking stick? If not, where is the point beyond which they will refuse to borrow from Western culture? Or, as in Samuel Butler's *Erewhon*, will some one year finally be fixed, and all technological innovations made prior to it accepted, and all those made afterwards rejected?

AT THIS point Alfred Weber, the contemporary German historian, has attempted to offer us a way out of our difficulty. For the most part he accepts, if not Spengler's, at any rate Toynbee's theory of culture cycles. But he limits the cyclical theory to that sphere which Spengler, in contrast to *civilization* (the technical arts), calls *culture*—the sphere of the spiritual. According to Weber, history shows that *civilization*, if spared from purely external disruptions, develops according to a law of linear progress. Progress in the technical arts of civilization, once made, is handed on and learned, and so can never be lost.

This is a plausible theory, but it is difficult to verify: it is hardly possible to compare the course of technological progress in various recorded civilizations for the reason that only the earliest river cultures of the Orient on the one hand, and our own civilization on the other, ever made any decisive technological advances. Moreover, the technological achievements of Ancient Egypt and Sumeria, unlike our own, did not spring directly from the soil of these two cultures, but were end

*Not long ago an extraordinary French cavalry officer, Count Lefèvre de Nouettes, a man gifted with the keenest historical intuition, showed that at the beginning of modern Western culture, about the end of the 11th century, a new method of harnessing draught-oxen came into use that quadrupled their pulling power and led to a social revolution of the first order.

products of a technological revolution begun several millennia before these cultures arose, a revolution that consisted chiefly in the passage from the hunting economy of the Old Stone Age to the agricultural, pastoral, and handicraft economy of the New.

And here we have stumbled on the key! This revolution leading from the Old Stone Age to the New, paving the way for all the high cultures of antiquity—this is the only event in the history of man's conquest of nature that can compare in significance with that technological revolution which began in Western Europe in the 11th century, died out about the 13th, and sprang to life again in the 16th. Any opinion on the fate of modern technology has to reckon chiefly with this great parallel case from our pre-history.

It is no good to say that we know the revolution of our own day well enough by observation from its very midst, without resorting to such doubtful parallels. We don't know it. We know indeed whence it came, but in all likelihood its curve is still only at its beginning and we haven't the faintest idea where it is headed, or how steadily or how fast. For the prehistoric Neolithic side of the parallel, we have a complete curve.

WHEN one compares the Neolithic (New Stone Age) and Western technological revolutions, the first thing one notices is an extraordinary similarity in the wealth of negative and positive consequences following from both. On the positive side, the Neolithic technological revolution created incomparably more favorable conditions for the life of the human species. Cultivation of the land made possible a tenfold increase in population, led to a lengthening of the average life span, and brought about a substantial increase in comfort (huts instead of caves). But against this must be set an unmistakably sharp decline in culture. It is of course very difficult, because of the absence of written documents, to compare the spiritual life of late Paleolithic (Old Stone Age) times with that of the early Neolithic period. Yet such art works as we possess supply definite hints. The scanty geometri-

cal ornamentation of Neolithic pottery cannot even remotely compare with the splendid cave paintings of the Magdalenians. In these two kinds of art one confronts the expressive forms of two entirely different kinds of "humanity": in the cave paintings an art of restless boldness and the deepest inner freedom, in the pottery a narrow, timid botching of materials and forms. The wide-ranging hunt freed the spirit, the sod fettered it. As in its cultural, so evidently in its social results too, the triumph of husbandry was extremely disadvantageous. The hunter was "free and equal," the husbandman became a slave and his master a despot.

THE first result of the Neolithic technological revolution, then, was the almost complete disappearance of the Paleolithic cultural inheritance. But only apparently and for a time. Much of it was preserved, especially among pastoral tribes, out of which developed the equestrian peoples. And these same bearers of a few musty and cramped traditions became the ruling classes of the high cultures that now arose, and which could have hardly come into existence without them. Thus on the new foundation of Neolithic economy the ancient, temporarily obscured spiritual traditions of Paleolithic times prevailed again. And this fusion of old cultural and new civilized values created the very high cultures of antiquity whose achievements in every respect far surpassed those of Paleolithic times.

As can be seen, the parallels with our own epoch are in many respects extremely close. On the other hand, it is vitally important that we should not view the gigantic crisis of our day crudely or narrowly, and it is narrow to regard it as simply one of many cyclical crises in human culture. The crisis of our age is much more than that: it is the second great phase in the development of civilization. Our crisis is not a duplication of an earlier crisis. It is, even when compared with that of the Neolithic Age, unique.

THE Neolithic technological revolution came to a standstill early in the course of

the Ancient Egyptian and Sumerian cultures, and it seems clear that no cultural motive in the narrower sense was at work, but rather a new environmental problem. It was a revolution that grew out of the battle with hunger. Empirical investigation confirms this inference. Late Magdalenian man had brought the technique of hunting to such a pitch of perfection that his life acquired enough room for him to experience higher cultural needs. But with the end of the Ice Age, the earth's last great geological revolution, game decreased and the amount of arable land increased. The hunting economy collapsed, and man was forced with ever greater rigor to devote all his energies once again to the simple struggle for survival, and to the building up of a village economy. The Neolithic revolution was a revolution from "without," one compelled by nature; and the very rise of the civilizations born of that revolution made its continuation unnecessary, for the new large states possessed organizations that more than assured the physical existence of man.

With the Western technological revolution, the case is reversed. Western science is a profound expression of Western man's orientation toward life, death, and reality. It is not merely a response to an external physical stimulus. Western society in its early stages did not have to face any new and fundamental problems. There was the problem of over-population; but earlier societies, too, had been obliged to reduce their excess populations, and this they did by colonization and conquest. Western society is probably the first in whose early stages expansion did not play the decisive role. In place of colonization outward, there was followed a course of colonization directed within—the progressive clearing of woodland for the plough—facilitated after a few years by the first perceptible increase in the productivity of human labor through an increase in animal tractive power. This unique course, a revolution from "within," was the result of the unique nature of Western culture, and is closely bound up with the West's distinctive urge to freedom.

The assertion of one's individuality in society is intimately related to the assertion of one's individuality against nature. And just because the Western technological revolution proceeded from "within," from a cultural spiritual drive to know the universe and master it, and was not prompted solely by necessity, for that very reason it became, not peripheral, but central to the whole history of the West, and now stands as its greatest achievement. Precisely because of the deeply spiritual character of this technological revolution, precisely because of the intimate connection between technology and freedom, because of the inseparability of Western (and *only* Western) technological, economic, and political development, all aiming at freeing the life and spirit of the individual, it is an offense against our most precious values to exalt other aspects of our culture, such as literature, art, and religion, at the expense of science, technology, and the advancement of knowledge generally.

GRANTING all this, is it still possible for something specifically Western in its development to continue to flourish outside the West should the example of the West cease to exist? The Neolithic revolution, we now can see, just because it came *only* from without, consisted of easily acquired skills and devices that could be and were handed on indefinitely. The Western technological revolution, on the other hand, is so completely defined from within, is so specifically—even in its underlying moral ideals—Western, that it is easy to doubt the possibility of its being transmitted. There is, for example, the enormous yet still hardly adequate violence—hardly adequate in so far as it does not achieve the ends for which it is intended—with which Russia is carrying out its policy of industrialization. Can something so patently artificial—that imitates the external and material sides of technology completely divorced from its deep cultural roots and impulse—endure, once its immediate stimulus—competition with the West—is removed?

I need scarcely remark the falsity of Spengler's belief in the complete destruction,

with a culture's downfall, of every distinctive value of that culture, the falsity of his doctrine of cultures as windowless monads. There is an enormous body of evidence to contradict Spengler on this point, evidence he never once tried to refute, but simply ignored. Not only the extrinsic values of civilization, but the most intrinsic cultural values too, have been handed on from society to society and epoch to epoch, and the fact that modern technology is intrinsic to the Western spirit, and not—as Spengler, Aldous Huxley, F. G. Jünger, Otto Veit, and countless others declare—a purely external body of knowledge and skills, is no argument at all against its transmissibility. It is only that the transmission of specific spiritual attitudes from one culture to another takes place according to different and more complicated laws than govern the simple learning of a quantity of knowledge and a number of skills.

Anglo-American ethnology has collected a huge amount of material bearing on the transmission of cultural values, but, so far as I know, the only one to attempt to draw any general inferences from it as to the relation of high cultures to each other is Arnold J. Toynbee. His notion of "affiliated civilizations," however, seems too narrow to me; he does no more than point to the fact that cultures follow one another in time and are the heirs of their predecessors. With Toynbee every later culture would seem to be the heir of some single earlier one. But the historical reality is much more complicated than that. True, there are cases—the "second" Chinese culture, for example, beginning with the older Han Dynasty—where a new culture is built almost exclusively upon a single ancient model (one is tempted to say that these "second" cultures fell considerably behind the "first" in creative strength). But what is much more frequently the case is that a new culture is first an amalgam and then a fusion of the basic elements of several older cultures. The Old and the New Testament cultures are classic examples of this. One arose in the borderland between Egypt and Babylon, and the other on the boundaries of Hellenism and the Orient. The

further analysis of such cases as these is bound to throw some light on our own problem as to the future of technology.

Here we must first note that what distinguishes the rise of a new culture is the conscious opposition it puts up to the introduction of certain foreign values. Early Judaism leaned to a limited extent on Babylonian cultural tradition, but toward Egypt it felt only the bitterest hostility. Early Christianity had some affinities with the religious traditions of Near Eastern syncretism, but it strictly enjoined any traffic with Greek paganism. Naturally, it was inevitable that the Jews should borrow certain elements of higher political organization, and the Christians various formal elements of culture, from the hated neighbors, but the borrowing was strictly limited to "external" things. With time, however, there came a mingling and assimilation.

In the very same way, one might say, Russia today cannot avoid adopting our technological methods, while at the same time she tries to isolate herself as much as possible, spiritually and politically, from the West. And it is this resistance to a foreign culture that makes her adoption of certain of the external values (external from the Russian but not from the Western point of view) of our civilization so artificial and forced. However, the upshot of this will in all likelihood be not at all as Spengler thought—Russia and Asia ultimately casting aside these temporary borrowings from Western technology "like a walking stick." It is far more likely that, as in every analogous earlier case, the external borrowing of a foreign civilization will be succeeded by a centuries-long process of inner assimilation.

BUT does this analogy hold up against the possibility that all of our higher culture will be swept away by a few hundred atomic bombs? Toynbee, with his particularly strong antipathy to modern technology, goes so far as to consider the possibility of our technological development leading to the complete destruction of all civilized peoples and the elevation of the Central African pygmies

to the position of the chief bearers of human culture. Against such a view of things there is little one can say in the way of conclusive argument. But an examination of historical precedents will disclose another perspective.

When one surveys all of human history, it can be seen that the periods in which cultures decline are indispensable intervals of cultural renewal. In the "dark ages" the modern Western spirit was gestative. The historical process just referred to, whereby a new culture results from the assimilation of elements from different older cultures, takes place without exception amid the catastrophic collapse of all the older cultures figuring in the process—takes place, that is, amid the upsurge of barbarism.

Vigorous and independent cultures resist to the death the challenge of a different culture. In their late stages they do not undergo a process of change, but tend rather to harden and grow rigid. Only when this period of rigidity is followed by collapse, does the creative process of fusion begin. This mechanism of cultural renewal, the decisive connecting link in the chain of human history, can be unhesitatingly called history's most universal law, admitting of not one exception. *A chaos precedes every cultural cosmos.* Chaos is not downfall, not ruin. It is the necessary connecting link between the end of one creative process and the beginning of another.

We hear it said that, regardless of the outcome of the present struggle between East and West, the world is "entering an era of barbarism." What in actual fact is "barbarism"? It is not the same thing as cultural primitivism, a turning-back of the clock. It is rather a phenomenon that manifests itself within the temporal and spatial boundaries of high cultures. It is a condition in which many of the values of high culture are present, but without that social and moral coherence which is the pre-condition for a culture's rational functioning. But for this very reason "barbarism" is also a creative process: once the over-all coherence of a culture is shattered, the way lies open to a renewal of creativity. To be sure, however,

this way may be through a collapse of political and economic life, and centuries of spiritual and material impoverishment and terrible suffering. Our own particular brand of civilization and culture may not survive unimpaired, but the fruits of civilization and culture, we may be sure, will in some form survive. There is no historical warrant for believing that the slate will be wiped clean.

Let us try for a more balanced perspective of this whole popular question of "the threatened disappearance of civilization." It is hardly to be doubted that we are now living at the beginning of a period of "barbarism." It cannot logically be proven that, like every earlier crisis of its kind, it will be a creative transition and not the end, although an inner consciousness should tell us that the highest stage reached in the development of the human spirit could hardly be the immediate prologue to its final downfall. The legend of the Tower of Babel has indeed a point for us, insofar as it is true that, build we ever so high, an end is reached to all our building. Yet the truth of the legend is temporally circumscribed: for the end was no end at all, but a new beginning—over and over again we build our Tower, and right now higher than ever. And here, if I may, I should like to take leave of history.

I HAVE already expressed my repugnance to an attitude that, in dealing with the problem of technology, would ignore the *truth* of modern science. Spengler vainly sought to demonstrate that Euclidean geometry was true only for antiquity. The fact is of course that it is true for all ages, only we have come to understand that it is a partial truth, that it is true when certain postulates are given. The same thing holds for modern technology and science. Once discovered, these truths are a universal possession of humanity, because they are not only human truths, but in accord with cosmic reality. Very possibly such truths can be lost sight of in chaotic transitional periods, but is it conceivable that they should vanish as if they had never existed? Or isn't it far more likely that, after having been purged in the fires of a great

cultural change, they should first really begin to shine forth?

And now the cat is indeed out of the bag. I have gone and blabbed my faith in progress, that unpardonable sin. Yet I do not mean that automatically, steadily accelerating progress in which Condorcet, Hegel, and Buckle believed, not a progress that can dispense with cycles and relapses, not a progress on an ever rising historical escalator that one can commit oneself to with smugness and equanimity. Still, much has happened in the course of our evolution from primordial atom to amoeba, from amoeba to man, and from Peking Man to Planck and Rutherford; and it seems absurd to me to imagine that in all this there is little more that is worthy of philosophical and religious notice than is involved in lamenting the sins and sufferings of existence.

We all know that the chief concern of the opponents of this qualified belief in progress is with the "timeless," and it is to the "timeless" that I too am led. The kernel of the faith in progress, it turns out, is a faith in the effective significance of objective truth in human life. Is it an accident that all those who deny progress, from Spengler to Barth, are the very ones who deny the efficacy of all the truths that man perceives by his unaided intellect? And is not truth one of the chief aspects of the divine? And in this respect, on the same level with morality? To deny the truths perceived by man, is it not to deny the stamp of divinity upon creation? Is not faith in progress perhaps in the end only a faith in God's positive working in history—and not outside of history?

But in Germany especially, this faith in the positive significance of truths perceived by man's unaided intellect is zealously combated. Is not this zeal perhaps only a disguised version of the old Lutheran belief in the devil's domain over the world? And this belief in the devil as "Prince of this world," reaching as it does by hidden ways from the Albigensians to Luther and ultimately uniting Lutheranism with Gnostic demonology—isn't this belief ultimately the root of all German evil? *Sapienti sat.*